**All About Triangles**  Name:

Geometry/Rodriguez Date:

We’ve conquered angles. Now, we’re going to spend time learning about polygons, which are shapes with 3 or more sides. We’ll start with 3-sided polygons: triangles! There are so many cool properties of polygons, but we should figure out some ideas about triangles first, and then make some comparisons to other shapes later.

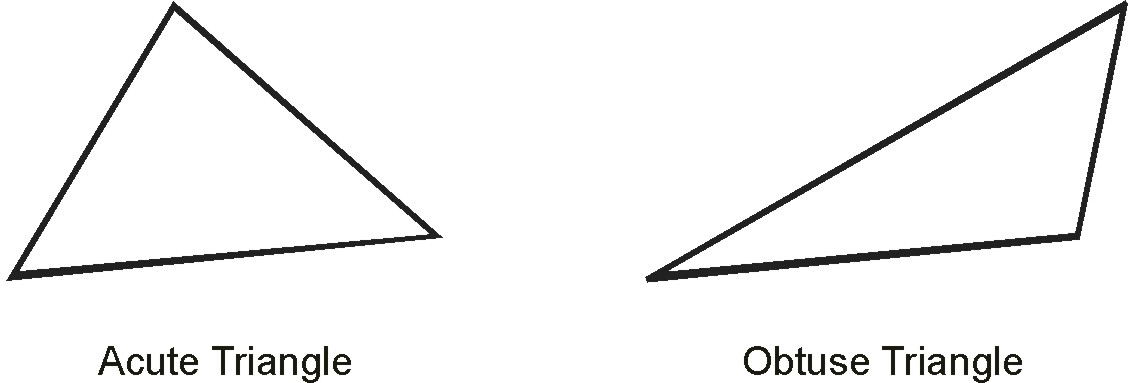
**PART 1: Are all triangles created equal?**

Do the following for each triangle:

1. Use your ruler to measure each side of the triangle.
2. Write the length of each side on the triangle in the picture.
3. Use your protractor to measure each angle of the triangle.
4. Write the measure of each angle inside the triangle in the picture.
5. After doing #1-4, write down 3 things you notice about the triangle. (Put those by “Observation 1,” etc.)

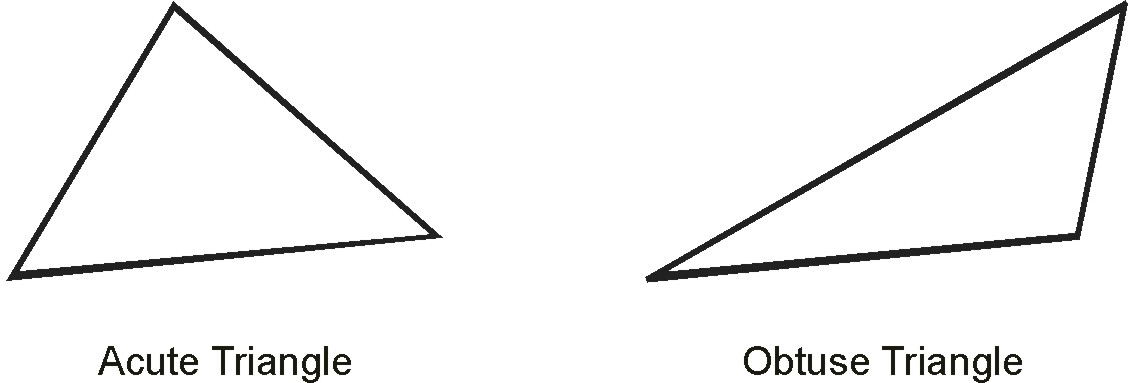
* Observation 1:
* Observation 2:
* Observation 3:

*Triangle 1*



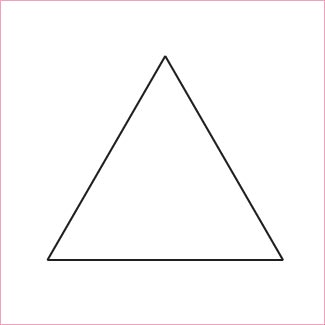
*Triangle 2*

* Observation 1:
* Observation 2:
* Observation 3:

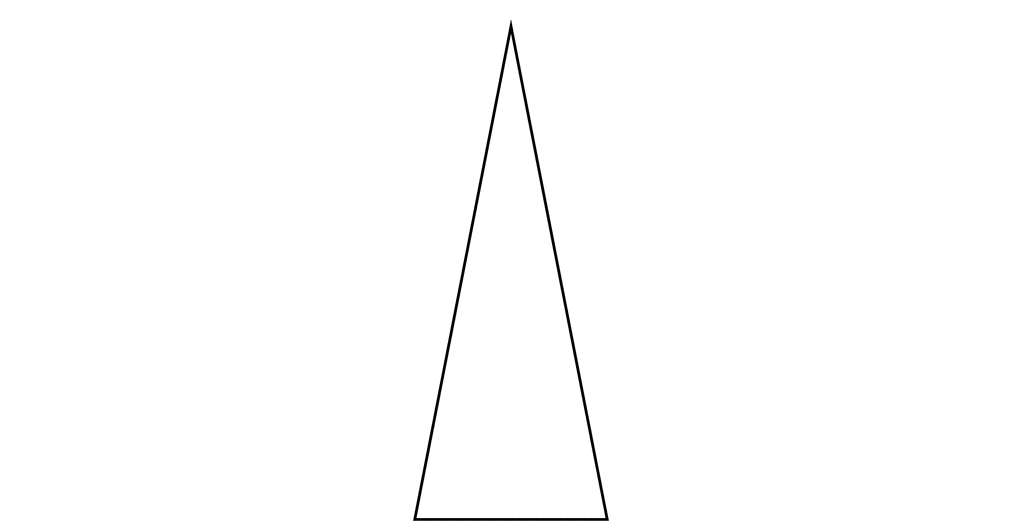


*Triangle 3*

* Observation 1:
* Observation 2:
* Observation 3:



*Triangle 4*



* Observation 1:
* Observation 2:
* Observation 3:

**COMPARISON:** Do these triangles have things in common? Was everything (or anything) different about them? Write 4 overall observations. (Yes, 4. Nothing fewer.)

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PART 2: Put some names to those triangles!**

a) There are 3 general types of triangles: isosceles, equilateral, and scalene.

* Triangles 1 and 2 from part 1 are called ***scalene***. What did they have in common? Why would they be scalene?
* Triangle 3 is an ***equilateral*** triangle. Why? How does the name give a clue?
* Triangle 4 is an ***isosceles*** triangle. Why? (What did that triangle have that the others didn’t?)

b) We can also classify triangles as obtuse, acute, or right. Why do you think so?

c) What information about triangles do you think is most important to know in order to classify them?

d) Can a triangle be an acute isosceles one? Or can there only be one type of classification? Why?

**PART 3**.

What were the measures of each angle of the triangles from part 1? Write them on the line, and then add them together. (You probably already know what’s going to happen…)

Triangle 1: \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_

Triangle 2: \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_

Triangle 3: \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_

Triangle 4: \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_

Why do you think this happened?

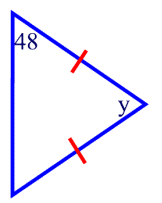
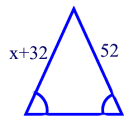
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**Formal definition**: The sum of the measures of the angles of a triangle is \_\_\_\_\_\_\_\_\_\_\_.

**PART 4**.

Use what you learned in parts 1-3 to do these.

1. Find the measure of angle *y*. 2. Find the value of *x.*

(Remember: the tick marks mean “congruent.”)

3. True or false? Provide an example to support your answer.

a) If a triangle is equilateral, then it is isosceles.

b) If a triangle is isosceles, then it is equilateral.

4. In triangle ABC, angle A measures 48° and angle C measures 24°. What is the measure of angle B?

5. One angle of a triangle measures 20°.

(a) What could the other 2 angles measure?

(b) Could this triangle be equilateral? If so, what should the other angles measure? Why? If it can’t be equilateral, why?

(c) Could this triangle be isosceles? If so, what should the other angles measure? Why? If it can’t be isosceles, why?